APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,211	01/30/2001	Pramod G. Joisha	NWU-P005	4219

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EXAMINER
KANG, INSUN

ART UNIT	PAPER NUMBER
2193	

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/773,211	JOISHA ET AL.
	Examiner	Art Unit	
	Insun Kang	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-21* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This action is in response to the RCE amendment filed 3/7/2005.

2.   As per applicant's request, claims 10-20 have been amended and claim 21 has

been added. Claims 10-21 are pending in the application.

Specification

3.   Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent
and should include that which is new in the art to which the invention pertains. If the
patent is of a basic nature, the entire technical disclosure may be new in the art, and the
abstract should be directed to the entire disclosure. If the patent is in the nature of an
improvement in an old apparatus, process, product, or composition, the abstract should
include the technical disclosure of the improvement. In certain patents, particularly
those for compounds and compositions, wherein the process for making and/or the use
thereof are not obvious, the abstract should set forth a process for making and/or use
thereof. If the new technical disclosure involves modifications or alternatives, the
abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of
the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:
(1) if a machine or apparatus, its organization and operation;
(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The abstract of the disclosure is objected to because the abstract refers to
purported merits or speculative applications of the invention (last sentence). Correction
is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

5.   Claims 10-21 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

Per claim 10, it is unclear how the determination of the input shape-tuple wherein

the size of at least one operand is unknown (assuming this limitation means: "the size is

unknown at compile-time") is performed and the resulting shape-tuple can be

determined prior to run-time.   Also, it is unclear what automatically analyzing the use of

each operand infers. The claim merely recites determining prior to run-time without

suggesting the specific steps of the determining as it is unclear how the resulting size in

line 7 can be determined prior to run-time when the size in line 4 is unknown.

Therefore, the limitation "determining prior to run-time" is interpreted as "determining at

execution time."   It is also unclear what the high-level array-based language means. It

is interpreted as "any high-level programming languages that have array data structure

such as C++, Java etc."

Per claims 12, it is unclear as to which resulting shape-tuple it is referring. It is

interpreted as "the resulting shape-tuple."

Per claims 14, it is unclear as to which appropriate rank it is referring. It is

interpreted as "the appropriate rank."

Per claims 16, it is unclear as to which shape-tuple operator it is referring. It is

interpreted as "the shape-tuple operator."

Per claim 20, it is unclear what "statistically unknown" means. It is interpreted as

"statically unknown."

As per claims 11, 13, 15, and 17-21, these claims are rejected for dependency

on the above rejected parent claims.

Claim Rejections - 35 USC § 101

6.   The rejection to claims 10-20 has been withdrawn due to the amendment to the

claims.

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8.   Claims 10-21 are rejected under 35 U.S.C. 102(b) as being anticipated by De

Rose et al. (A MATLAB to Fortran 90 Translator and its Effectiveness," ACM, 1996)

hereinafter referred to as "Rose."

Per claim 10:

Rose discloses:

-determining an input shape-tuple for each operand of a program expression of a high-level array-based language wherein the size of at least one operand is unknown ("Our inference mechanism extracts the initial type information from four sources...type, rank, and shape are statically known," page 309 right column; "Rank inference could be avoided by assuming, as MATLAB does, that all variables ... are matrices," page 312 left column; page 310 section 2.1)

-automatically analyzing the use of each operand in the program expression ("the translator propagates shape information in terms of input values. Built-in MATLAB functions can provide information for...inference," page 310 left column; and

-determining prior to run-time a resulting shape-tuple of the program expression ("The static intrinsic type inference mechanism propagates types through expressions using a type algebra similar to that described in...for SETL...Tables containing for each operation the type of the result as a function of the type of the operands are used to implement this algebra," page 311 left column; "we infer the range for the output value by performing the operation using the minimum and maximum values of the operands," page 311 right column) as claimed.

Per claim 11:

The rejection of claim 10 is incorporated, and further, Rose teaches that the high-level array based language is MATLAB ("Type inference...MATLAB," page 309 right column) as claimed.

Per claim 12:

The rejection of claim 10 is incorporated, and further, Rose teaches:

-determining a rank of the resulting shape-tuple; and, promoting the input shape-tuple

for each operand to an appropriate rank (page 312 section 2.4 Shape and Rank

inference) as claimed.

Per claim 13:

The rejection of claim 12 is incorporated, and further, Rose teaches:

-identifying a rank of the input shape-tuple for each operand; identifying a built-in

function in the program expression; and determining the rank of the resulting shape-

tuple according to the built-in function and the rank of the input shape-tuple for each

operand (page 312 section 2.4 Shape and Rank inference) as claimed.

Per claim 14:

The rejection of claim 12 is incorporated, and further, Rose teaches:

-comparing the rank of the resulting shape-tuple to the rank of the input shape-tuple for

each operand; responsive to the rank of the resulting shape-tuple being greater than the

rank of the input shape-tuple for an operand, expanding the input shape-tuple for the

operand to correspond with the rank of the resulting shape-tuple; and,

appending trailing extents of the expanded input shape-tuple for the oprand with an

appropriate value (page 312 section 2.4 Shape and Rank inference) as claimed.

Per claim 15:

The rejection of claim 10 is incorporated, and further, Rose teaches:

- determining a shape-tuple operator for the built-in function; and, applying the input

shape-tuple of each operand to the shape-tuple operator for the built-in function (page

312 section 2.4 Shape and Rank inference; "Rank and shape can be propagated

through matrix constructors, through built-in functions that construct matrices based on

the parameters...through built-in functions that return matrices with the same shape as

the input parameter...and through expressions in general," page 313 right column) as

claimed.

Per claim 16:

The rejection of claim 15 is incorporated, and further, Rose teaches

-looking up, in a table, a shape-tuple operator corresponding to the built-in function

(page 312 section 2.4 Shape and Rank inference; page 313 right column) as claimed.

Per claim 17:

The rejection of claim 16 is incorporated, and further, Rose teaches:

-calculating a shape predicate for the resulting shape-tuple (page 312 section 2.4

Shape and Rank inference; page 313 right column) as claimed.

Per claim 18:

The rejection of claim 10 is incorporated, and further, Rose teaches:

-performing an array conformability check at run-time for a first statement;

and applying a result of the conformability check to a second statement (page 312

section 2.4 Shape and Rank inference; page 313 right column) as claimed.

Per claim 19:

The rejection of claim 18 is incorporated, and further, Rose teaches:

-determining a relationship among the first statement and the second statement (page

312 section 2.4 Shape and Rank inference; page 313 right column) as claimed.

Per claim 20:

The rejection of claim 18 is incorporated, and further, Rose teaches:

-preallocating storage for each operand whose size is statistically unknown, based upon the input shape-tuple for each operand (page 312 section 2.4 Shape and Rank inference; page 313 right column) as claimed.

Per claim 21:

The rejection of claim 21 is incorporated, and further, Rose teaches:

responsive to the rank of the resulting shape-tuple being less than the rank of the input shape-tuple for an operand, truncating the input shape-tuple for the operand to correspond with the rank of the resulting shape-tuple (page 312 section 2.4 Shape and Rank inference) as claimed.

Response to Amendment

9.   The amendments to the claims filed on 3/7/2005 do not comply with the requirements of 37 CFR 1.121(c) because:

In claims 10-20 of the amendment, single brackets, [] are used for deletion. *For applicant's reference: deleted text must be shown by strikethrough, with two exceptions: for deletion of five or fewer consecutive characters, double brackets [[]] may be used and if strikethrough cannot be easily perceived, deleted text must be shown by [[]] around the deleted text characters.

Per claim 13, "a build-in function" in line 5 was not presented in the previous version; therefore, the phrase needs to be underlined.

Per claim 16, the [] in line 3, after "and" is unnecessary. The period needs to be

underlined.

The new corrected amendment is required upon response to this office action.

Response to Arguments

10.   Applicant's arguments filed 3/7/2005 have been fully considered but they are not

persuasive.

Per claim 10:

The Applicant states that:

"unlike the present invention which determines all variable sizes prior to run-time, the

De Rose system must rely on a type of dynamic determination in which the shape of the

variables is not known until the program is actually executed (page 6-7)."

In response to applicant's argument that the reference fails to show certain

features of applicant's invention, it is noted that the features upon which applicant relies

(i.e., shape-tuple notation and shape-tuple operators to determine the size and shape of

variables prior to run-time; determining all variable sizes prior to run-time) are not

recited in the rejected claim(s). Although the claims are interpreted in light of the

specification, limitations from the specification are not read into the claims. See In re

Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). As such, the claims are

read with the broadest reasonable interpretation in mind (Note MPEP 2111). Claim 10

does not recite the limitations in such a way to distinguish the claim from De Rose's method. The claim merely recites "determining prior to run-time a resulting shape-tuple of the program expression" without further specifying how such determination is performed as the applicant admits that the prior art cannot determine the shape-tuple prior to run-time when the shape is unknown. Therefore, the limitation "determining prior to run-time" is interpreted as " when the shape of a variable is not statically determinable, then infer at execution time." If applicant means anything more, this must be brought out in the claims to further clarify the invention.

Per claims 11-20:

The applicant states that claims 11-20 are allowable as being dependent on claim 10. As has been shown above, the rejection of claim 10 is maintained, the argument that claims 11-20 are allowable as being dependent on the allowable base claim is considered moot. Accordingly, the rejections of claims 11-20 are considered proper and maintained.

11.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Insun Kang whose telephone number is 571-272-3724. The examiner can normally be reached on M-F 7:30-4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on 571-272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

I. Kang
Examiner
5/6/2005

TODD INGBERG
PRIMARY EXAMINER